

SOME ADDITIONAL TRILOBITES FROM NEW SOUTH WALES.

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(With Plate xlvii.)

Order **OPISTHOPARIA.**

Family ACIDASPIDAE.

Genus CERATOCEPHALA.

CERATOCEPHALA PHALAENOCEPHALA,* n.sp.

(Plate xlvii., figs. 1-3.)

Only the headshield known. This is very mildly convex, sub-oblong, much wider anteriorly than posteriorly, much expanded at the anterior angles, thence contracting towards the genal angles rather strongly; tuberculation sparse consisting of small even-sized tubercles arranged in rows on its different parts; anterior and posterior borders parallel; greatest width, 14 mm., length, 6 mm. *Glabella*—medial lobe very mildly convex and oblong, two pairs of glabellar furrows and lobes present—the second and basal pairs—each pair of the furrows appearing to be continuous and forming an open shallow U-like sulcus; both pairs of lobes are indistinct. The neck furrow is relatively deep

* With a head like a moth.

and wide, and its lateral extension distinct. Neck ring and its lateral extensions narrow, front border or limb reduced to a sharp edge. Axial furrows relatively wide and shallow. Fixed cheeks sub-reniform, very mildly convex; each bears a row of about six tubercles longitudinally; anterior eye-lines well defined, narrow, and surmounted with about five tubercles, of which the anterior and posterior are most distinct. Free cheeks large, depressed, subtriangular; their front borders, mildly thickened, bear about eighteen tubercles, some of them near the antero-lateral angles being subulate but not spinate; furrows are faint, neither borders nor furrows are present laterally; eyes small, circular or conoid, fairly prominent, situated about midway between the anterior and posterior margins. Genal spines of moderate length and nearly straight, directed horizontally outward at an angle of about sixty degrees. Occipital spines appear to be equal in length to those of the genal angles, straight, horizontally directed backward, and only mildly divergent.

Obs.—The line of greatest width of this headshield lies just behind the front border, and thence to the bases of the genal spines its width diminishes. The posterior to anterior width is 12 : 17, and the transverse distance between the eyes from outer edge to outer edge of each equals the posterior width across the genal angles or spines. In outline this shield bears some resemblance to *C. vogdesi* E. and M. but in other respects, however, it differs from that species materially. For instance, in *C. vogdesi* the cephalic spines are sub-erect for some distance from their points of origin and then strongly arched and falcate. Those of the present form are directed horizontally backward and are nearly straight. In the former the neck spines, as a very recently acquired and perfect cephalon of that species shows, arise from the front of the occipital ring, but in the case of the latter they arise from the posterior of this ring. The occipital ring in the former is very wide, in the latter just the opposite. The eyes in the former are near the anterior border and directed outward at an angle of about 45°, depressed and overhang the free cheeks; in the latter the eyes are situated about midway between the anterior and posterior borders and are erect. The greatest width of the cephalon of *C. vogdesi* is across the medial line and behind the eyes; in the present form it is anterior and in front of the eyes. This new cephalon also resembles that of *C. jacki* E. and M., but the strongly spined

border of the free cheeks of the latter clearly separates the one from the other.

From *Acidaspis vesiculosa* Barr. the present species differs in having the front margin of the cephalon almost smooth and the anterior-lateral angles more acute.

Loc. and horizon.—Minahan's Selection, Bowning Creek, Parish of Bowning, County Harden, N.S.W. Lower Trilobite Beds of Bowning-Yass Series. Upper Silurian, probably the equivalent of Barrande's étage E.

ODONTOPLEURA HARTLEII, n.sp.

(Plate xlvii., figs. 4-8.)

Whole form unknown.

Cephalon.—Subsemicircular, only very moderately convex and appears to have been finely granulated. Greatest length and width 6.25 and 15.6 mm. respectively, or approximately two and a half times as broad as long. Glabella—medial portion moderately convex, finely granulate, antero-lateral angles expanded and prominent; two pairs of lateral glabellar furrows present; they are deep and circumscribe the glabellar lobes, the first pair of which is subquadrate, and the second or basal pair is much the larger. Neck furrow medially exceedingly faint, but narrow and deep behind the basal lobes. Neck ring wide, gently arched; bases tuberculate, and join directly with the genal lobes thus interrupting the axial furrows, and the lateral extensions of the neck furrow. Fixed cheeks small, the lobes only moderately tumid and small; eye lines or ridges mildly developed and surmounted by a row of small tubercles. Triangular areas of moderate size, slightly concave. Wings long and very narrow, traversed by very narrow and almost invisible furrows; along the anterior and posterior margins are rows of very fine granules. Front border linear and very finely dentate. Free cheeks large, fairly tumid, spaces between the eyes and lateral furrows bear five or six irregular rows of tubercles of varying sizes; lateral furrows shallow, borders strongly thickened and bear fourteen or more spines. Genal spines strong, long and slightly falcate. Eyes small, situated opposite the neck furrows.

Thorax not known.

Pygidium.—Greatest length to width approximately 2 : 5. surface finely granulated, articulating face straight to near the

extremities, whence it turns rather abruptly backwards. Axis moderately convex, consisting of two wide rings, indefinitely separated. Axial grooves shallow. Side lobes depressed, pleural divisions indistinct, but they are each divided into two lobes by faint ridges. Border strong, thickened, carries eight or doubtfully ten spines, two being intermediate to the strong pair.

Obs.—This trilobite in some particulars resembles both *O. rattei* E. and M. and *O. jenkinsi* E. and M., but is more nearly related to the former than the latter, and this relationship is very noticeable in comparing their pygidia; but even in these parts material differences are readily observable. For instance, the tail spines in the present are eight and doubtfully ten at most; in *O. rattei* they number twelve. The two strong spines in the latter species, subtend from strong pleural ridges, but in the former weak ones. The wings of the fixed cheeks in *O. hartleii* too are relatively longer and slenderer than in *O. rattei* or in *O. jenkinsi*. The central part of the glabella in *O. rattei* is relatively longer and more convex than in the present species. The limb is much more distinctly dentate in the former than in the latter; in the latter, also, the antero-lateral angles of the glabella are much more expanded than in the other. The neck furrow and rings in *O. rattei* are well developed; the opposite is the case in the present form.

Dedicated to Mr. Charles Hartley of Balheary, Chatsbury, a member of one of the pioneering families of the Goulburn district and who collected the specimens above described.

Loc. and horizon.—Back Creek, Tarlo River, Parish of Turrallo, County Argyle, one mile N.W. of the slate quarry, associated with undetermined *Enerinurus*. Probably Upper Silurian.

Order **HYPOPARIA.**

Family TRINUCLEIDAE.

TRINUCLEUS CLARKEI, n. sp.

(Plate xlvii., figs. 12-14.)

A pygidium obtained from Duntroon associated with *Enerinurus duntroonensis*, I have determined to belong to the above genus. The following are its chief features:—Widely triangular, mildly convex and apparently had been granulated;

widest across the articulating face. Greatest width 15 mm., length 6 mm. approximately. Axis prominent, steep sided, dorsally depressed, made up of ten rings which bore transverse rows of granules, ridges narrow, prominent and traversed by fine sutures, sulci deep and relatively wide; its anterior width is much less than that of one side lobe, and ends abruptly at the inner edge of the border with a width approximately two thirds of the anterior width. Axial grooves wide and shallow. Pleura mildly convex between the axial grooves and border, divided into five segments, of which the fifth is faint; the first two anterior pairs are at right angles with the axial line the others only gently directed backwards. Border relatively wide, faintly separated from the pleural segments, of which only the anterior pair crosses it to the outer margin; under surface striated, the striae being concentric and apparently seven in number.

Obs.—I have very little doubt that in determining this pygidium to belong to a species of the genus *Trinucleus*, the determination is correct, and if so it is the first and only part of a trilobite of that genus described and figured from this State.

The late Rev. W. B. Clarke recorded the occurrence of specimens of this genus at Yarralumla and that one species had been dedicated to him by Sir W. Macleay, but of those specimens no further record was ever made, and what became of them is unknown. The discovery of the pygidium above described will tend to confirm Clarke's announcement with reference to the presence of *Trinucleus* in the rocks of this State. (Clarke, Quart. Journ. Geol. Soc., iv., 1848, pp. 64, 66.) Yarralumla, where Clarke said he found a *Trinucleus* which he could not separate from *T. caractici*, is only two miles from where the present pygidium was found.

The Duntroon specimen resembles the pygidium of *T. albidus* Reed (Reed, Pal. Tril. Girvan, supp. Pal. Soc., 1913, pp. 3, 4. Pl. 1, fig. 2) in outline, in number of axial rings in the axis and in its border, but possesses fewer pleural segments, and is more than double the size of *T. albidus*.

No *Trinucleus* pygidium known to me closely agrees with the one described above. In selecting a specific name I have chosen to confirm the dedication of the late Sir W. Macleay.

Loc. and horizon.—Near Duntroon homestead, Parish of Canberra, County Murray, associated with *Encrinurus duntroonensis* E. and M. Evidently Ordovician.

Family PROETIDAE.

Genus CYPHASPIS.

CYPHASPIS FILMERI, n.sp.

(Plate xlvii., figs. 9-11.)

Only the medial portion of a head shield of this trilobite is at present known, and, although its singular features led me many years since to conclude that it represented a new species for Australia, in the expectation of acquiring additional and better specimens, the description of it was deferred till now.

Sp. Chars.—Cephalic shield probably subsemicircular and depressed. Glabella subquadrate or suboval, moderately elevated and dorsally depressed, sides steep, as are also both front and back, granulated with six to seven longitudinal rows of even-sized granules. Glabellar basal lobes not sufficiently well preserved to determine their characters. Neck furrow relatively wide and deep. Neck ring narrow, strap-like, surmounted by one very distinct medial tubercle and a less distinct one on each side of it near the axial grooves. Limb relatively wide, finely granulated, strongly upturned, deeply furrowed or convex in front. Axial furrows defined. Fixed cheeks small, wings short. Free cheeks and eyes unknown. Facial sutures anteriorly between eyes and inner boundary of limbs straight, thence diverge at an angle of about 30° . Margin not thickened. Length of head, 4.7 mm.

Obs.—The only Australian *Cyphaspis* that has come under notice that bears any resemblance to the present type is *C. horani*, and to that species the resemblance is confined to the character of the granulation on the glabellae. To no head shield of any foreign *Cyphaspis* which has come under my notice does the present species bear close resemblance or at least to the portion of it available for the above description.

Dedicated to Mr. W. D. Filmer, of Toronto, N.S.W., an enthusiastic collector of natural history specimens.

Loc. and horizon.—Great Southern Road, Belle Vale estate, Parish of Yass, County King. Lower Trilobite Beds of Bowning and Yass series; associated with *Cyphaspis yassensis* and *Calymene australis*, Upper Silurian.—etage E. of Bohemia.

EXPLANATION OF PLATE XLVII.

Ceratocephala phalaenocephala Mitchell.

Fig. 1. —Photo of a perfect headsfield. Coll.Mitchell.

Figs. 2 & 3. —The same more or less restored.

Odontopleura (Acidaspis) hartleii Mitchell.

Fig. 4. —Photo of a headshield from a badly preserved specimen.
Coll.Mitchell.

Fig. 5. —The same with the features restored.

Figs. 6 & 7. —Photos of a pygidial fragment; 7 being restored in part.
Coll.Mitchell.

Fig. 8. —Photo of a free cheek partially restored.

Cyphaspis filmeri Mitchell.

Figs. 9 & 10.—Photo of a fragmentary headshield in which the medial portion is preserved.

Fig. 11. —The same with the features restored.

These figures show how closely the glabella and its limbs resemble a cheese cutter peaked cap.

Trinucleus clarkei Mitchell.

Figs. 12 & 13.—Photos of a nearly complete pygidium. Coll.Mitchell.

Fig. 14. —The same more or less restored.